Pioneer in public health

Gaol distemper, believed then to be due to contaminated air, was also taking its toll of human life. It was natural, therefore, that Hales, as his interests became more and more humanitarian, should switch from the academic study of the respiration of animals to the practical problem of the ventilation of buildings. He devised machines, driven by windpower, which sucked the stale air out to let fresh air get in. His method was cumbersome. But such was the force of his personality that he got his windmills erected over St George's Hospital and over many prisons, notably the notorious Newgate and the Savoy; his ventilating systems installed in many of His Majesty's ships, even in ships carrying slaves, battened down between decks, in the long voyage across the Atlantic. When the Seven Years' War broke out, he corresponded with the enemy and strove to get them installed wherever British were confined in France.

His ventilators must have reduced the incidence of airborne disease, notably that of tuberculosis, but it is unlikely that they affected the mortality of gaol fever. Typhus is conveyed from man to man, not by air, but by body lice.

Having got his ventilators adopted—and it had been uphill work indeed—he could get back to his first love, and at 80 we see him at his last experiment. It concerned the respiration of fish. "June 7. The wind SW. Thermometer 58°. 13 gudgeon were put in 2 gallons of pond water in Pail A and a like number in Pail B." Pail A was "ventilated" with air. Pail B was not "ventilated." All the fish in the latter died, showing that fish were dependent on air dissolved in water. But I quote this experiment to point the unquenchable experimental spirit in the man, exemplified, too, by quaint ideas he held about salt water. "If the trial were made in 20 tents," he wrote, "to wet the soldiers' bodies with it in cold weather (he was worrying about the health of our service personnel), it would probably give some light unto the matter"—and then a little wearily—"but I know by very much experience that the indolence in mankind is too great to attempt useful discoveries by proper trials and without proper trials useful discoveries cannot be made."

His reputation as a scientist and as a pioneer of public health was now international. His books had been translated into many languages. Georgia was a flourishing colony. The trustees had dug in their heels. It had not been handed over to the Spaniards. The Royal Society of Arts was on its feet. The Gin Bill had become law. (That night, we are told, there were "tears in his eyes for joy.") His windmills raced, sucking the foul air out of Newgate and the Savoy; out of St George's; out of His Majesty's ships; even out of slave ships on the high seas and military prisons in France. So he could settle down to his fireside and get down to his garden—he was a friend of the poet Pope who had a grotto garden at Twickenham—calmly to wait for death, an acquaintance, we are told, "long familiarised to his mind." And it came to him quietly at Teddington in his eighty-fourth year.

"As I know you loved the good old man," wrote Gilbert White to a friend, "how can I do better than send you some anecdotes respecting him. His attention to the inside of ladies' tea-kettles that from thence he might judge the salubrity of their wells; his advising water to be showered down suspicious ones before men ventured to descend; his teaching the housewife to place an inverted egg cup at the bottom of her tarts and pies in order to preserve the juice; his directing air holes to be left in the out-walls of ground floor rooms to prevent dry rot. These are but a few among those useful pursuits on which his mind was constantly bent. Though a man of a baronet's family and of one of the best houses in Kent, yet was his humility so prevalent that he did not disdain the lowest offices, provided they tended to the good of his fellow men. The last act of benevolence on which I saw him employed—and *I* can somehow see him at it *now*—was at Farrington, the next parish to this, where I found him in the street with his paint pot before him, much busied in painting white, with his own hands, the tops of the foot-path posts, lest his neighbours might run against them in the dark."

His monument stands in Westminster Abbey. His bones lie buried under the tower which he had built himself for the old church at Teddington about which he had cared so much. "How well," wrote John Wesley in his diary—Wesley had visited him at Teddington—"how well did science and religion agree in that man of sound understanding."

The first BMA Gold Medal

PHILIP A JONES

British Medical Journal, 1977, **2**, 1658-1660

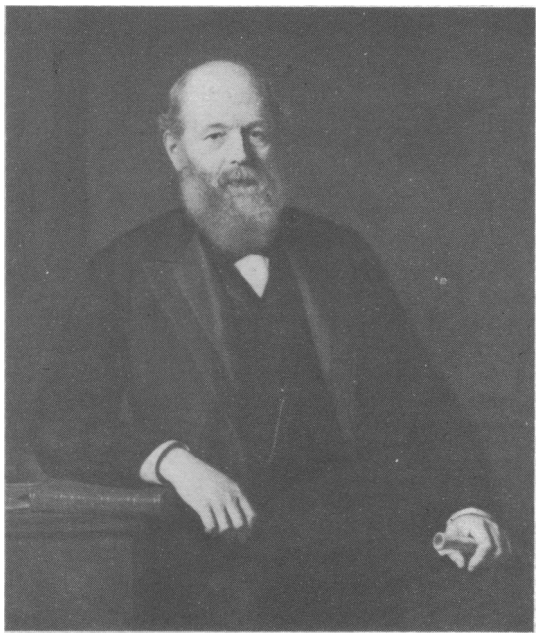
This year has seen the centenary of the award of the first BMA Gold Medal. The story of the events that led up to this award is of general historical interest and also provides an interesting glimpse of contemporary medical politics. It started with a mining accident in South Wales. This was neither the first serious accident in the coal-mining industry nor was it the biggest to date but the courage and endurance of the rescuers were, after a week of effort, rewarded with success. Thanks to the relatively recent development of the railways and telegraph, news of this achievement soon spread throughout the nation, and the interest and imagination of the public were aroused.

Redditch, Worcestershire
PHILIP A JONES, MB, BS, general practitioner

The Rhondda valleys at the beginning of the nineteenth century were wild and in places impassable. For three decades the population would number only a few hundred. Then coal was discovered, and by the end of the century there would be 130 000 inhabitants, all dependent for their livelihood on the several collieries that had opened up throughout the district. The Tynewydd Colliery was situated at Porth, the "door" to the two valleys.

Dr Henry Naunton Davies

The surgeon to this colliery was Dr Henry Naunton Davies. He had been born locally in 1827. His father and grandfather were both doctors, and the family had at that time already given a hundred years of service to the local community. Further generations down to the present time have carried this tradition of service much further afield.[1] Henry Davies went to school in Swansea and then to Guy's Hospital. He qualified in 1854 and succeeded to the practice which had been left vacant



This portrait of Dr Henry Naunton Davies was commissioned later in life and presented to him as an expression of public respect and appreciation. It now hangs in BMA Welsh Office, Cardiff.

at the death of his father four years earlier. He was to hold appointments to 11 collieries, as medical officer of health, factory surgeon, and public vaccinator, as well as looking after his practice with the help of assistants. His own account of "The Recent Catastrophe at Tynewydd Colliery, near Pont-y-pridd" was published in the *BMJ*.[2]

Accident and rescue

At 4 pm on 11 April 1877 water from a neighbouring colliery broke through into the Tynewydd workings trapping 14 men underground. Five of these men were located quite quickly. They were imprisoned in a chamber by the floodwater, which was now held back by the pressure of compressed air. First attempts to rescue them ended in tragedy. A tunnel was dug through 12 yards of coal and, when communication was made with the chamber, one young man was caught in the rush of escaping air. He was flung head first into the hole that had been made and died of asphyxia. The chamber was decompressed by boring further holes and the remaining four men were released 18 hours after their incarceration.

On the evening of the second day it was discovered that more men were alive, trapped in a stall 75 yards from the main heading. After initial works to lower the water level further, teams of men, working in four-hour shifts, were to tunnel towards the trapped men. They worked in a passage a yard wide and only a foot or two in height, getting through as much as 40 yards of coal in two days.

When he could see a real possibility of a successful outcome Davies began to prepare for the reception of the trapped miners. There was no hospital so he took a large room in the nearby Tynewydd Inn for use as a ward and arranged for Miss Jenner of Wenvoe Castle to come and take charge of the nursing. Arrangements at the pit top were then left in the hands of a friend, Dr Edward Davis of Mountain Ash, and his own brother, Idris Davies. Henry Davies and his two assistants, Edgar Duke and Washington David, were to make themselves available underground where their services might be most needed. With some breaks they spent a total of 48 hours in the pit.

The trapped men were freed on the afternoon of 20 April. The *South Wales Daily News* reported "Every man came up attended by a doctor." As they were being brought out a telegram was received from the Queen at Osborne asking if they were saved. The Home Secretary also sent a message praising the work of the rescuers and asking for the latest news. That night he arranged for a notice to be put up at the door of the House of Commons: "All the five men have been rescued alive. R A Cross."[3]

Aftermath

Two bodies were recovered from the mine the next day, and two more would be recovered later. Meanwhile attention now focused on the five rescued miners and their rescuers. A meeting was held at a local hotel to raise funds for the families of the dead and the relief of the five men, who were not expected to work for some time. Henry Davies was made treasurer. The Lord Mayor of London sent a message to say that he was going to raise money as well, and he presently launched a fund for the benefit of the victims and to recognise the efforts of the rescuers. Members of the Stock Exchange contributed 100 guineas and within a few days £2200 had been received at the Mansion House. The receipt from one donor of the sum of 10 guineas for the rescuers and three pounds for the rescued reflects the state of public opinion. The Queen, apparently conscious of the strength of popular feeling, decided at the end of April that the Albert Medal, previously awarded only for acts of heroism at sea, should henceforth be given for acts of bravery on land as well. Twenty-five medals, four first class and the remainder second class, were awarded to the rescuers, who were also to receive watches from members of the House of Commons. The professional men who had worked so hard were not included, although they were each to receive an inscribed silver salver from the Mansion House appeal fund.

The 45th Annual Meeting of the BMA was held in August 1877 at Manchester. In his address the retiring president, Dr de Bartolomé,[4] referred to this discrimination: ". . . the heroic services of the miners—of those who laboured with the pick and mattock and spade—were recognised on every hand, but the services of the medical men engaged in the same calamity —services not the less heroic and not the less valuable—were less valued and less recognised." The President of the Council, Dr Falconer,[5] made a statement in which he recapitulated the story of the rescue. He stated that Duke and David had been the first to crawl through the narrow tunnel when communication had been established and that the doctors, when in the pit, had shared the same danger as the rest of the rescue team. It had been decided that the Association would "found a medal to be bestowed for distinguished merit, the first recipients of which should be the medical men engaged in the rescue of the entombed miners at Pont-y-pridd." These awards would reflect the admiration of 7000 medical men of Great Britain and Ireland for men who, in other countries, would have fared better at the hands of their sovereign.

The gold medal was awarded to Henry Naunton Davies "upon whom devolved the chief responsibility, care and anxiety. . . ." Duke, David, and Edward Davis were given silver medals, and eight bronze medals were distributed to others who had "exposed their lives more or less in the pit and rendered essential service when the miners were released." Since there had not been sufficient time for the medals to be struck, Dr Davies and his colleagues who were present at the meeting were then presented with engrossed copies of the accompanying resolution recording the recognition of their "heroic conduct, self-denial, and humanity."

Duke left Wales shortly after the accident but David was to stay in the Rhondda and become a colliery surgeon. Henry Davies remained active in both public and medical affairs. He became a country alderman. In 1887 he was elected President of the South Wales and Monmouthshire Branch of the BMA and, when this branch celebrated its centenary in 1971, the

gold medal, on loan to the Association by his granddaughter, was on display.[6]

But his experience at Tynewydd had left him with one main ambition—to build a hospital to serve the local community. In 1894 a 10-bedded cottage hospital was opened in Porth. He died five years later. The *BMJ* simply recorded the announcement without comment. It was left to the *Lancet*[7] to publish a final tribute to a man who 20 years earlier had earned the admiration of the 7000 members of the Association. This obituary acknowledged his contribution in time and money to the building and running of the hospital.

The establishment of a medal bestowed for distinguished merit was held to introduce a new era in the history of the BMA. Since then the subject has been officially treated with at best polite interest and at worst complete indifference. Did the BMA overstate the case in the first place? After all, doctors had been decorated for bravery. James Mouat was among the first recipients of the Victoria Cross, for gallantry displayed at Balaclava in 1854. The BMA had recently shrugged off its provincial origins in search of national status and the suggestion that doctors find themselves in a disadvantageous position compared with other sections of society would appeal to the membership as much as it does today. On the other hand it must be acknowledged that the deeds of today are soon overshadowed by the achievements of tomorrow. Since 1877 there have been four wars and numerous other opportunities for acts of courage inside and outside the medical profession. Yet, in an age grown accustomed to the travels of men in space, it is still not too difficult to appreciate that a hundred years ago the journey to the pit bottom was equally hazardous. It is in this context that the award of the first gold medal should be remembered.

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1 Davies, N N, *Two and a Half Centuries of Medical Practice—A Welsh Medical Dynasty*, in *Wales and Medicine*, ed J Cule. Llandysul, The British Society for the History of Medicine, 1975.
2 Davies, H N, *British Medical Journal*, 1877, **1**, 580.
3 *The Times*, 21 April 1877.
4 *British Medical Journal*, 1877, **2**, 189.
5 *British Medical Journal*, 1877, **2**, 222.
6 *British Medical Journal*, 1971, **4**, suppl 21.
7 *Lancet*, 1899, **2**, 128.

(*Accepted 13 September 1977*)

What chemicals are contained in the fluorescent strips used commercially for heavy vehicles? Can they cause dermatitis?

The reflective strips currently used on commercial vehicles consist basically of a film with adhesive on one side and resin on the other, which is impregnated either with glass beads or with a fluorescent pigment. Apart from some German fluorescent pigments that are individual chemical compounds, almost all fluorescent colours on the market today are organic dyes molecularly dispersed in organic resins. Two main types of pigment are available: (1) a dyed thermoplastic resin based on an amine formaldehyde complex modified with aromatic sulphonamide (the amine may be benzoguanamine, urea, or melamine, or a combination of these), and (2) one based on a dyed thermoset resin with different molecular proportions of aromatic sulphonamide and amine.[1] There is no known evidence to suggest that these substances present any hazard to health in normal use, and I have been unable to find any reports of dermatitis caused by fluorescent pigments.

1 Dane, C D, *Chemistry in Britain*, 1977, **13**, No 9.

Three of my patients (aged over 60) taking steroids for chronic bronchitis have developed a profuse clear rhinorrhoea. This is not cerebrospinal fluid. What is the reason?

The implication is that the rhinorrhoea is related to the corticosteroids, but I have not come across this association before. Patients with bronchitis may have excessive secretions from the upper respiratory tract, and corticosteroid aerosols may cause rhinorrhoea,[1] presumably from direct irritation.

1 Lessof, M H, *British Journal of Hospital Medicine*, 1977, **18**, 360.

What is the treatment and prophylaxis of harvest mite (Microtrombidium autumnale) infestation?

Harvest mites ("chiggers" in the USA) are a species of arthropod, *Trombicula autumnalis*. Related tropical species cause scrub typhus. Man is affected by European species when walking through grass or low vegetation. The season extends from May to October, with a peak in September. The mites are large enough (1·5 mm) to be seen by the naked eye, but the larvae are only 0·25 mm long, and are red and six-legged. They do not burrow or bite, but insert their proboscises into the skin and thereby produce quite fierce inflammatory reactions, particularly in those allergic to the juices. Calamine lotion, perhaps with 0·5-1·0% phenol, is soothing, or alternatively 10% cortamiton may help. If itch is severe a topical corticosteroid and systemic antihistamine should be prescribed. An insect repellent cream containing dimethyl phthalate and diethyltoluamide will certainly be of value for prophylaxis and is available from most chemists without prescription. Benzyl benzoate emulsion has been recommended[1] as being effective when used on clothing and less easily washed out than other repellents.

1 Gouck, H K, *Archives of Dermatology*, 1966, **93**, 112.

Is there any evidence that measles inoculation gives (a) immunity for life and (b) in the case of girls, immunity that will in turn give their babies immunity during the first six months of life. If the answer to either is uncertain we may be risking measles among the elderly and the infants.

Results of studies over 15 years in the USA and over 12 years in Britain strongly suggest that live attenuated measles vaccines give long-lasting immunity.[1] The antibodies responsible for protection after vaccination have the same properties as those acquired from natural infection, and may therefore be expected to be passed on transplacentally to the fetus to an equal extent.

1 *Lancet*, 1977, **2**, 387.

As only very small amounts of penicillin are contained in a dose of oral polio vaccine and true penicillin allergy in very young children is relatively uncommon, should oral polio vaccine be withheld from children who give a history of a mild reaction to penicillin? As protection is so important could not hypersensitivity be defined more clearly?

Although the live oral poliomyelitis vaccine does contain trace quantities of penicillin, at the normal age when vaccination is performed (about 6 months) it is extremely doubtful whether hypersensitivity to penicillin presents any serious problem. It is at the age when booster doses are given, at 12-14 months and 5 years, or perhaps even in older persons who are travellers to underdeveloped parts of the world, that the problem is likely to present itself. The Committee on Safety of Medicines has reports of various untoward reactions, such as rashes, urticaria, and convulsions; but in many of these cases patients have been receiving other medications at the same time as the vaccine and a cause-and-effect relationship has not been established. Experience with oral poliomyelitis vaccine suggests that penicillin sensitivity, even in older children and adults, does not present any particular problem, and where there is a vague history of penicillin allergy it is preferable to administer the vaccine rather than to withhold it, which is a serious step.